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10/606,436	06/25/2003	Steven M. Burns	085.10940-US (03-325)	6928
34704	7590	11/16/2007	EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/606,436  
Filing Date: June 25, 2003  
Appellant(s): BURNS ET AL.

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NOV 16 2007  
GROUP 1700

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Barry L. Kelmachter  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed August 9, 2007 appealing from the  
Office action mailed January 25, 2007.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6042898	BURNS	03-2000
2003027209	RITOKU	01-2003
62139810	NAOYUKI	06-1987

### **(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

#### Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Appellant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c ) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 15-23 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 6042898 to Burns et al.

Burns discloses steps of coating, diffusion heat treatment, peening, carbonizing, grit blasting, ionized gas cleaning, and coating. The features relied upon described above can be found in the reference(s) at: col. 3, line 31 to col. 4, line 37 and col. 6, example 2. Burns does not disclose cleaning the workpiece during diffusion heat treatment step and gas flow rate. But, cleaning workpiece at any step is contemplated within ambit of ordinary skill artisan when the workpiece is contaminated. With respect to the gas flow rate that it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the gas flow rate in order to balance

cost of gas and cleanliness of the gas, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 1-14, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over USP 6042898 to Burns et al as applied to claims 15-23 above, and further in view of JP 62139810 (PTO-1449) or JP 2003027209 (PTO-1449).

The Burns reference discloses the features substantially as claimed as set forth in the rejection above except for step of cleaning a furnace. However, JP 62139810 (abstract) or JP 2003027209 (abstract) teaches cleaning a furnace with inert gas in an vacuum furnace/chamber. Treating gas is transported by a pipe (40) to center of the furnace (see JP 2003027209 drawings 1-3 and abstract). JP 62139810 in abstract teaches to heat inside of the heat treatment furnace at temperature higher than heat treatment temperature in order to remove moisture and oil. This teaching reads on limitation in claim 29. Although specific temperature range has not been specified, it teaches temperature difference sufficient high to remove contaminants. Therefore, it would have been obvious to one having ordinary skill in the art of the cited references at the time the invention was made to clean a heat treatment furnace as taught by JP 62139810 or JP 2003027209 in order to improve/provide a clean furnace for heat treatment. *In re Venner*, 120 USPQ 193 (CCPA 1958), *In re LaVerne, et al.*, 108 USPQ 335, and *In re Aller, et al.*, 105 USPQ 233.

#### **(10) Response to Argument**

Appellant's arguments filed August 9, 2007 have been fully considered but they are not persuasive.

Applicants have found

that improved coatings can be obtained begins with cleaning a furnace to be used in the diffusion heat treatment using a heat treat cycle with a gas being injected at the center of the work piece location area. It is this aspect of the claimed invention

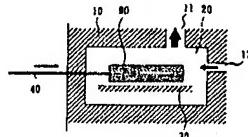
Appellants argue that " which is neither taught nor suggested in Burns et al. "

First, Burns in col. 4, lines 4-10 teaches to clean blade surface with ionized gas stream.

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Preferably, however, the initial potential will be about 160 V at about 0 amps, stepping down to about 35 V at about 100 amps to maintain a continuous ionized gas stream cleaning process. To ensure effective cleaning, the ion gas stream cleaning process should last for a time suitable for vaporizing contaminants from the blade's 2 surface. The cleaning time is a variable based on part size and surface area. ~~Thus,~~ The cleaning does not exclude center of the blade.

Second, appellants' attention is directed to JP 2003027209 below that gas transport



pipe transport gas to the center of the work piece if it is needed.

Appellants argue that Burns fails to teach inject gas at workpiece center location.

But, Burns teaches to inject gas to workpiece surface that includes workpiece center location. Furthermore, there is no factual evidence that injecting gas only at workpiece center location possess unexpected result.

The Examiner contends that cleaning the workpiece at any step is contemplated and within the ambit of ordinary skill artisan when the workpiece is contaminated. Even if this statement were true, it does not address the method step which is missing from Burns et al. - namely, performing the diffusion heat treating step with the gas being injected at a workpiece

Appellants argue that "center location. ~~Thus, Appellants submit that the Examiner has,~~ "

Appellants' attention is directed to col. 3, below that the blade surface is cleaned and

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heated in inert gas atmosphere which does not exclude the center location of the blade.

improved by 50% or more by following such prior art cleaning processes with an ionized gas stream cleaning process, such as reverse transfer arc cleaning.

Ionized gas stream cleaning involves placing the blade 2 to be cleaned into a vacuum chamber, reducing the pressure 50 inside the vacuum chamber, flowing an inert gas into the vacuum chamber, and striking an arc between an electrode and the blade 2. The arc superheats oxides and other contaminants on the blade's surface, causing the oxides and contaminants to vaporize. Preferably, the ionized gas stream 55 cleaning process will be performed at pressures of about 30 torr absolute (4.0 kPa) to about 40 torr absolute (5.3 kPa) and temperatures of about 1400° F. (760° C.) to about 1600° F. (871° C.). Most preferable, the ionized gas stream cleaning process will be performed at pressures of about 35 torr 60 absolute (4.7 kPa) and temperatures of about 1500° F. (816° C.). Suitable inert gases include, helium, argon, or mixtures of helium and argon. The arc may be struck in any conve-

~~16 - It is entirely silent on the subject. Still further, Burns et al. does not teach or suggest the gas flow rate of claim 17; the partial pressure of claim 18; the gas flow rate of claim 19; the step of injecting an inert gas into said workpiece center location of claim 21; the step of injecting argon into said workpiece center location of claim 22; and the step of injecting a reducing gas into said workpiece center location of claim 23.~~

Appellants argue that "With

respect to the gas flow rate that it would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the gas flow rate in order to balance cost of gas and cleanliness of the gas, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Moreover, Burns in col 3, lines as attached above discloses gas cleaning with inert gases while maintaining chamber vacuum which meets flow rate and conditions as set forth in appealed claims 17-19. With respect to claims 21-23 that cleaning and heat treatment of Burns do not exclude center location of the blade surface.

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Appellants argue that none of cited references teaches the claimed flow rate. But, appellants have not shown the claimed flow rate is critical or possessed unexpected result. It would have been obvious to one having ordinary skill in the art at the time the invention was made to manipulate the flow rate in order to remove contaminants, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

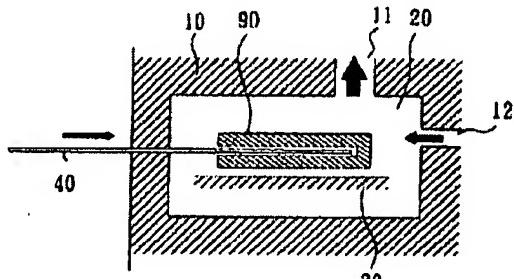
Appellants argument with respect to JP 62139810 is noted. But, JP 62139810 is cited to show cleaning heat treatment furnace is known in the art of cited references. Moreover, heat treatment of JP 62139810 does not exclude center location of work piece.

With respect to JP 2003027209, appellants' argument below

Invention There is absolutely nothing in this document which teaches performing a furnace cleaning step by injecting a gas at "a workpiece center location and applying heat. ~~In fact, the~~" Appellants' attention is

directed to JP 2003027209 abstract that

heating space of the vacuum furnace is reduced. Treating gas is continuously sent to the deep holes by a transport pipe under slightly higher pressure than the pressure of the "heating space and at a suitable flow rate. When the vacuum space is maintained at a set" The deep hole is



at the center location of the work piece.

Appellants argue that JP 2003027209 "does not talk about cleaning the furnace at all."

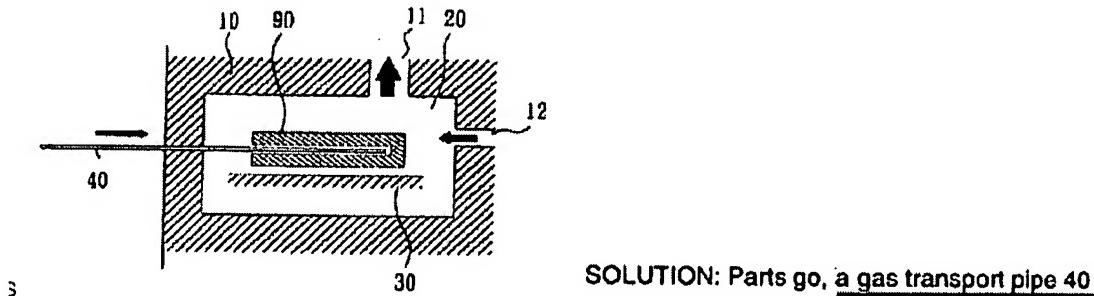
Appellants' attention is directed to abstract pasted below

SOLUTION: Parts go, a gas transport pipe 40 and a fixing appliance 30 are cleaned and dried, are installed in the prescribed positions in the heating space within a vacuum"

With respect to claim 28, none of the cited and applied references teach or suggest providing a manifold within a chamber of the furnace. Thus, none of the cited and applied

Appellants argue that " none of the cited and applied "

Appellants' attention is directed to JP 2003027209 member 40 below



Appellants' argument with respect to claim 29 and JP 62139810 is noted. But, it is found immaterial because diffusion temperature is material dependent. But, there is no material being defined in instant claims so there is no point to speculate how high the diffusion temperature.

Appellants argument in section (E), first paragraph is noted. But, drawing is proportional to the actual setup. Nonetheless, there is no showing that center location of any work piece would not be treated.

injected at a workpiece center location. Undoubtedly a turbine blade has a center, but this is not a teaching of what is being

Appellants argue that " claimed. As for the Examiner's comment about the lack of " But,

appellants do not provide reason why center location of the blade would not be cleaned/injected with stream of gas.

With regard to the first full paragraph on page 5 of the office action, the temperature in column 3, lines 33 - 40 is a cleaning temperature, not a diffusion heat treatment

Appellants argue that "temperature." But,

appellants' attention is directed to col. 5 below which discloses diffusion treatment at

spray. The metallic bond coat was then diffusion heat treated at about 1975° F. (1079° C.) and peened by gravity assist shot peening. After peening, the burner rig bars were placed 45 in a furnace and heated to 1300° F. (704° C.) for 30 minutes about the same temperature

Moreover, diffusion temperature is material dependent which is contemplated within ambit of ordinary skill artisan to adjust it.

Appellants' arguments in section (E), last two paragraphs are noted. Figure 1 of JP 2003027209 has shown that gas pipe 40 transports gas to the center location of the work piece. At the middle of the abstract, said reference teaches to use suitable flow rate. Unless claimed flow rate possesses unexpected result or critical, otherwise is no more than optimization.

#### (11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

S. Ip

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